

Town of Brookline,vermont

PO BOX 403
734 Grassy Brook Road
Brookline, VT 05345
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brooktreasurer@comcast.net
brook763@comcast.net

April 13, 2016

Mr. Alan May
Agency of Transportation
Municipal Assistance Bureau
1 National Life Drive
Montpelier, Vermont 05633

Received

APR 15 2016

VTrans
PDD-LTF

Re: Town of Brookline, VT Application for FY17 Vermont Better Roads Grant
Application, Category B

Dear Mr. May,

Enclosed please find our town's application for the above-referenced grant. We have emailed a scanned copy but are also submitting this hard copy via mail.

Regards,


Somara Zwick, Treasurer

cc: A. Clark, Road Commissioner
B. Hoard, Selectboard Chair
M. Bills, Road Foreman



Received

APR 15 2016



VTrans
PDD-LTF

FY17 Vermont Better Roads Grant Application

Please complete this page **ONCE** and return with your **Grant Category Application(s)**

Town/Organization: Town of Braintree Contact Person(s): Jeff Masterson, Road Foreman

Address: 932 Vermont Route 12A, Braintree, 05060

Street Address Town Zip
Email: braintreehighway@gmail.com Phone: (802) 728 - 9380

DUNS #: 108878489 Fiscal Year End Month (MM): _____

Accounting System: ☐ Automated ☐ Manual ☒ Combination

Please use the suggested documentation checklist below to ensure that all of the relevant items regarding your application have been included.

- ☒ Grant application cover sheet (Only submit one)
- ☒ Grant application form (One per category/project)
- ☒ Itemized Cost estimate for labor, equipment, and materials (see enclosed Cost Estimate Worksheet). If applicable, please break down funding by source (i.e. different grant sources)
- ☒ Project Location Map (please show location of affected water)
- ☒ Sketch of proposed erosion control measures or other management practices, including distances in feet
Also show approximate location of town/other right-of-way and/or property lines
- ☒ Photo(s) of the project area
- ☒ Letters of Support (RPC, VTrans District Technical Staff, ANR Rivers and Streams Engineers, etc.)
- ☐ If Category C River/Road Conflict or Category D River/Stream Structure or Culvert, you must attach ANR/ACOE consultation



Vermont Better Roads Grant Program Application

Please complete one application per category and/or project you are applying for. You may make copies of the application for multiple applications per category and/or multiple categories.

Please check the Category you are applying for:

- ☐ B. Correction of a Road Related Erosion Problem and/or Stormwater Mitigation Retrofit for both gravel and paved roads
- ☐ C. Correction of a Stream Bank or Slope Related Problem
- ☒ D. Structure/culvert upgrades

Town/Organization: Town of Braintree

Project Name: Thayer Brook

Road Name: Thayer Brook Road TH #: 4 Structure # (if applicable): _____

Road Type: Unpaved Uncurbed

Class 3

Watershed: White basin 9

Please provide a thorough description of the problem (ex. Roadway has steep slope with no ditch which is causing roadway erosion):

There are 7 undersized and short culverts in very poor condition along Thayer Brook Road: #1 (30" steel pipe), #4 - 15" x 25' steel, #5 - 15" x 25' steel, #6 - 24" x 30' plastic, #7 - 15" x 25' steel, #11 - 15" x 25' steel, #12 - 15" x 25' steel. Drainage from the ditch to the bank are poor as these culverts are undersized. Drainage sometimes overflows onto the gravel road making travel treacherous and eroding the travel lane as the road is flat. There is not much road base covering the culverts at this time.

Description of Project and how you plan to complete the work (ex. Stone line 500' of ditch by reshaping ditch and stone lining, working from the top of the project down to the bottom):

The proposed project is to replace 6 culverts (5 15" x 25ft steel and 1 24" x 30ft plastic) with 5 18" x 40ft and 1 24" x 40ft grey plastic culverts with increased road base material. Replace culvert #1 from a 30" pipe to a 83 x 128 metal pipe. This will improve the drainage along that stretch as culverts #8 to #10 were upsized right after T.S. Irene.

Expected Effects (+ & -) on water quality (ex. Erosion will be eliminated by placing the stone ditch):

There will be a reduction of sediment as the culverts will provide adequate drainage flow and not impact the gravel road edges as it abuts ledge.



Distance from end of project to nearest water (stream, lake, or stormwater system that outlets directly to water). 0-50'

Progress to Date:

Road crew continue to clean out culverts and continue ditching to improve drainage flow.

Is there an emergency reason this project must be completed quickly? If yes, please explain:

No.

Has this project been identified through a municipal road inventory, capital budget plan, tactical basin plan, culvert inventory, or other management plan? If yes, please list which.

☒ Yes: 2014 culvert inventory

☐ No

Please list any professionals you may have contacted for assistance with this project (ANR River Management Engineer, Army Corps of Engineers, VTrans District Technical staff, Basin Planner etc.):
ANR River Management Engineer Jaron Borg

Is the project located in the town "Right of Way?" Yes, No, Both (if "Both" please explain further).

Yes

Will the town road crew complete this work? Yes, No, Some (if "some" please explain further).

Yes



Describe how the grant funds will be spent and/or attach a project budget:

Please see attached project budget sheet.

How do you plan to meet the required 20% match on this grant?:

Town Highway Budget funds

Requested Grant Amount (\$20,000 max Category B, \$40,000 max Categories C & D): \$ 37,103.40

Estimated Total Project Cost (including 20% local match): \$ 46,379.25

Estimated Completion Date: 12/31/2017

REQUIRED ATTACHMENTS:

- ☒ Itemized Cost Estimate (labor, equipment, materials)
(For assistance, call Better Backroads at 802-828-4585)
- ☒ Project Location Map
(Please show location of affected water; 1:12,000 USGS map, if possible)
- ☒ Sketch of proposed erosion control measures, including:
 - ☒ Distances (ft.)
 - ☒ Estimate of waste & borrow quantities
 - ☒ Approx. location of town/other right-of-way and/or property lines
- ☒ Photo(s) of the project area.
- ☐ Agreement for Entry and/or Deed of Easement (if project is outside Town ROW).
- ☒ If project involves stream or river/road conflict, include documentation of consultation with a River Management Engineer.
- ☐ Other appropriate supporting documents.

By signing this application I certify that all the information provided is accurate to the best of my knowledge. We will comply with all the requirements of the grant including making our books available for audit if required.

SIGNATURE OF APPLICANT: (Must be Town Administrator/Manager or Select Board Chair)

Name: Timothy O'Connell

Title: SELECT BOARD CHAIR

Cost Estimate Worksheet

Town and Road Name: Thayer Brook Rd, Braintree

Project Name: Thayer Brook culverts + ditching



Labor	Rate	# Hours	Total (Rate x Hours)
Highway Crew	\$24.41/hr	240 hours	\$5,858.40
Labor Total			\$5,858.40

Equipment	Rate	# Hours	Total (Rate x Hours)
Trucking (Contractor)	\$85.00/hr	60 hours	\$5,100.00
Excavator with hammer	\$220.00/hr	32 hours	\$7,040.00
Backhoe	\$35.32/hr	35 hours	\$1,236.20
S130 Bobcat	\$325.00/day	2 days	\$650.00
Town Trucks (Tandem)	\$71.50/hr	40 hours	\$2,860.00
Equipment Total			\$16,886.20

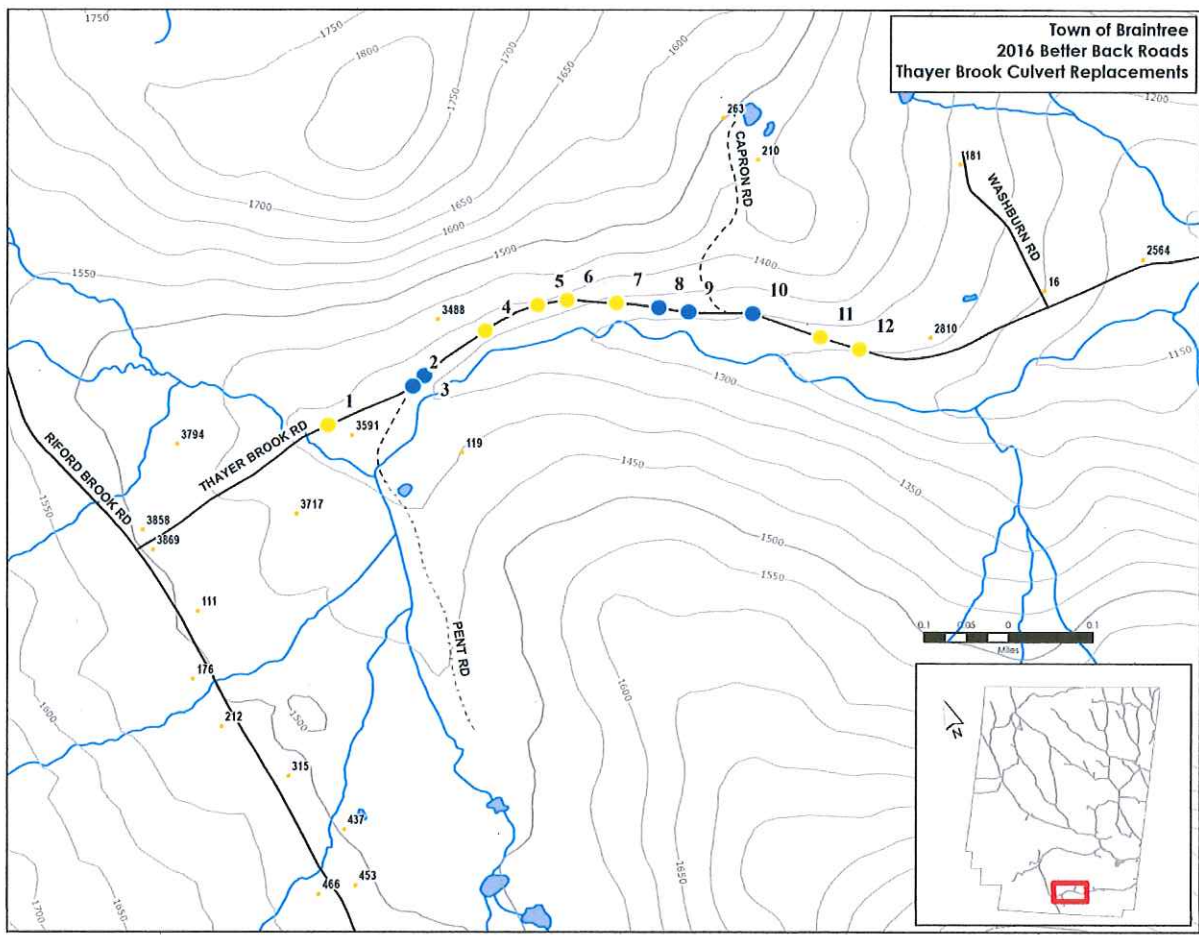
Materials	Rate	Amount	Total (Rate x Amount)
18" x 40' plastic culvert (x5)	\$12.95/ft	200 ft	\$2,590.00
48" x 40' plastic culvert (x2)	\$61.70/ft	90 ft	\$5,553.90
128 x 83 12 GA ALT2 CORR MTL PIPE	\$212.00/ea	50 ft	\$10,600.00
128 x 83 12 GA ALT2 MTL BND	\$424.00/ft	1 ft	\$424.00
Waste Blocks (6'x3'x18")	\$40.00/ea	62	\$2,480.00
Rip Rap	\$31.97/yd	75 yards	\$2,397.75
Rip Rap 7" Erosion Stone	\$11.15/yd	56 yards	\$624.40
3/4 Plant Mix	\$11.65/yd	120 yards	\$1,398.00
2: Minus Dense Grade	\$11.15/yd	132 yards	\$1,471.80
1 1/4 Plant mix	\$11.55/yd	120 yards	\$1,386.00
Materials Total			\$28,925.85

Miscellaneous	Rate	Amount	Total (Rate x Hours)
Miscellaneous Total			

Grand Total \$51,670.45

Match \$11,670.45





Culvert 12: Outlet Gully





Culvert 11: Inlet and Ditch



Culvert 11: Outlet



Culvert 7: Inlet



Culvert 7: Outlet



Culvert 7: Inlet Ditch



Culvert 6: Inlet



Culvert 6: Outlet and Stream



Culvert 6: Inlet



Culvert 5: Inlet



Culvert 5: Outlet



Culvert 4: Inlet



Culvert 4: Outlet

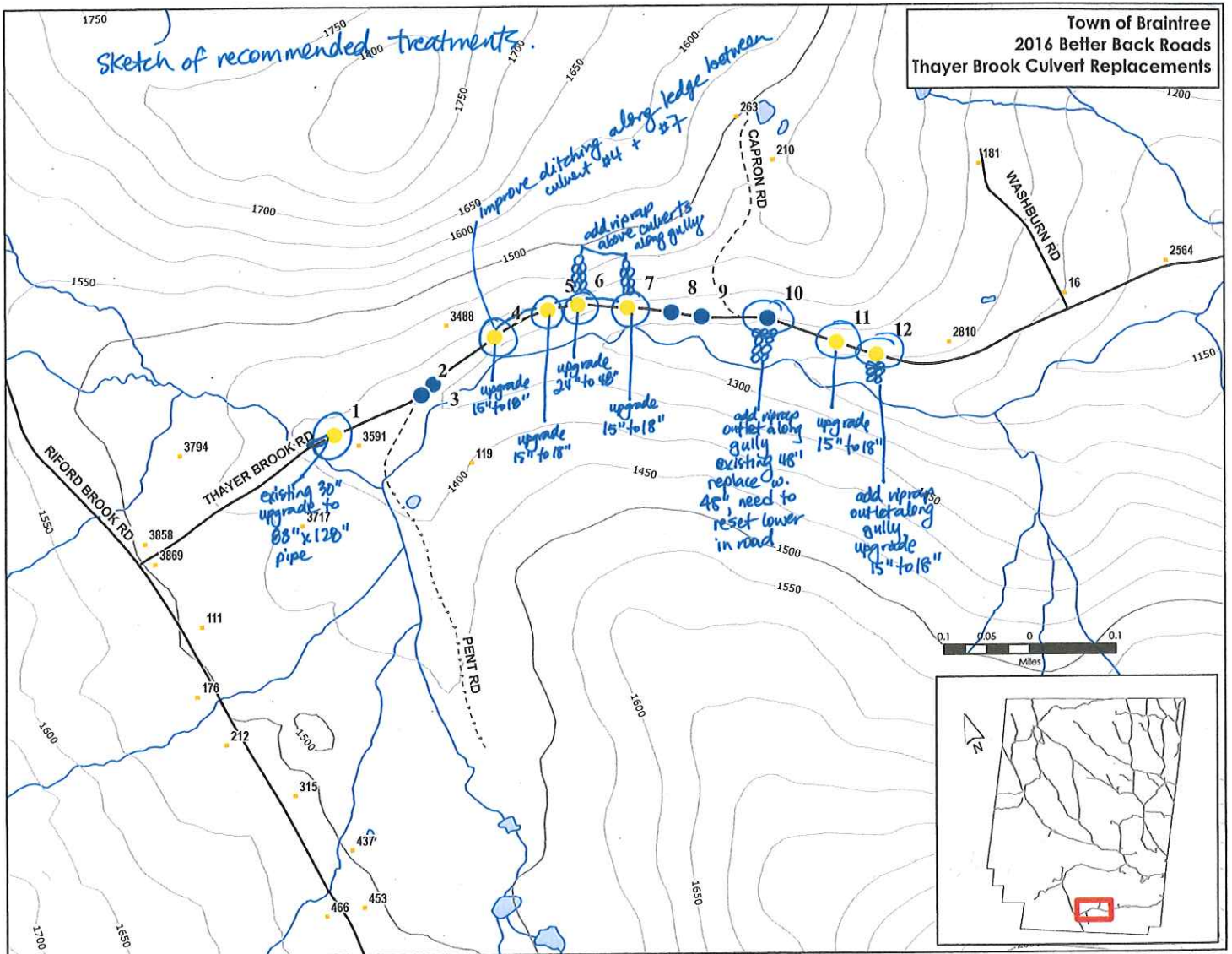


Ditch along Thayer Brook Road



Sketch of recommended treatments.

Town of Braintree
2016 Better Back Roads
Thayer Brook Culvert Replacements



Site Description

Thayer Brook Road is a gravel road in the southeastern portion of the Town of Braintree. It connects with Riford Brook Road and continues into the Town of Randolph. The road follows Thayer Brook for its entire duration, and crosses the brook several times. This road sustained damage during Tropical Storm Irene.

Culvert #1: N43.92808	W-72.74408	30" x 30' steel culvert: poor condition
Culvert #4: N43.92841	W-72.73976	15" x 25' steel culvert: poor condition
Culvert #5: N43.92843	W-72.73837	14" x 25' steel culvert: poor condition
Culvert #6: N43.92829	W-72.73769	24" x 25' plastic culvert: poor condition
Culvert #7: N43.92790	W-72.73666	15" x 40' steel culvert: poor condition
Culvert #10: N43.92675	W-72.73383	48" x 40' plastic culvert: good condition
Culvert #11: N43.92590	W-72.73261	15" x 25' steel culvert: poor condition
Culvert #12: N43.92543	W-72.73189	15" x 25' steel culvert: poor condition

Culvert #1 is a 30" x 30' steel culvert in poor condition that is too short and undersized. The culvert should be upsized to a 10'3" x 6'9" x 50' steel pipe. There will be cement block headers to widen the roadway as it currently is a pinch point, in addition to bringing the road elevation up a few feet.

Culvert #4 is a 15" x 25' steel culvert in poor condition that is too short. The culvert should be upsized to a 18" x 40' plastic culvert, and the ditching around the inlet and outlet should be improved to facilitate drainage flow.

Culvert #5 is a 15" x 25' steel culvert in poor condition that is too short. The culvert should be upsized to a 18" x 40' plastic culvert and the ditching around the inlet and outlet should be improved to facilitate drainage flow.

Culvert #6 is a 24" x 25' plastic culvert in poor condition that is too short. This culvert should be upsized to a 48" x 40' steel. Riprap should be installed above the culvert inlet where there is an intermittent stream to prevent cutting of the bank. Install a stone apron near the perched culvert outlet.

Culvert #7 is a 15" x 40' plastic steel culvert in poor condition that is too short. This culvert should be upgraded with a 18" x 40' steel plastic culvert. Add 12" stone above culvert inlet to reduce erosion from drainage of bank above.

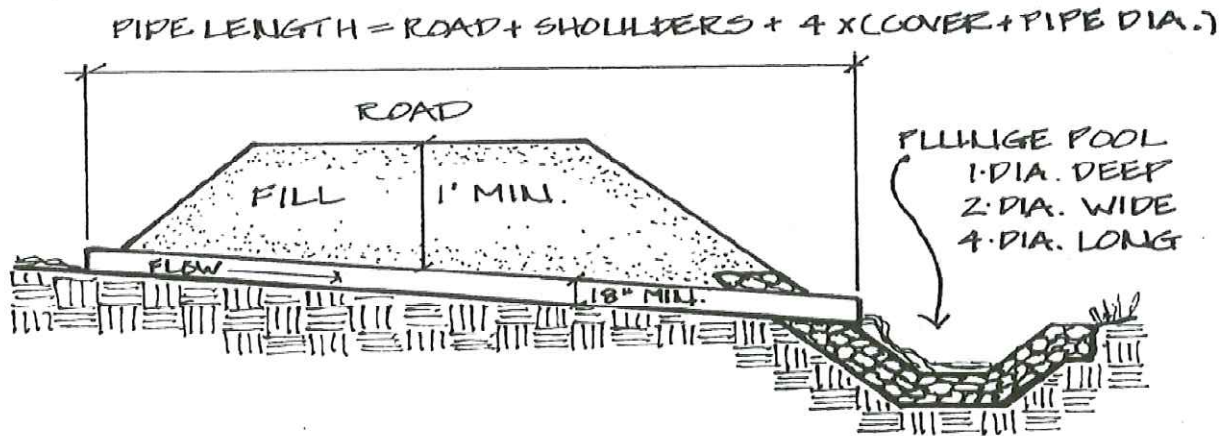
Culvert #10 is a 48" x 40' plastic culvert in good condition, but can be replaced with 48" x 40' and reset lower in the ground for improved drainage of an intermittent stream. Riprap should be installed below the outlet to reduce perched culvert erosion impacts.

Culvert #11 is a 15" x 25' steel culvert in poor condition that is too short. This culvert should be upgraded to a 18" x 40' steel culvert that is reset lower in the road. The culvert is currently too shallow, as evidenced by recent grading efforts.

Culvert #12 is 15" x 25' steel culvert in poor condition. Recommended upgrade to 18" by 40' steel and improve ditching to inlet. The outlet has existing gully erosion, and 15 yards of rip rap should be installed from the outlet to reduce erosion.

Recommended Treatment

Replace culvert #1 with a 10'3" x 6'9" x 50' steel pipe. Replace culverts # 4, 5, 7, 11, and 12 with 18" x 40' plastic culverts. Replace culverts #6 and #10 with 48" x 40' plastic culverts. Improve overall ditching between culvert #4 and culvert #7, but especially 200ft along ledge between culvert #5 and #6.



Permit Requirements - A VT DEC Stream Alteration Permit will not be required for this project. Jaron Borg visited the site on March 23, 2016 and concurred with the recommended treatments.

Construction Notes:

- Construction Specifications - See specifications in Vermont Better Backroads Manual, 2009
- Buried Cable/Utilities - Buried cable/utilities may be on site. Call Dig Safe 1-888-DIG-SAFE to locate buried utilities prior to construction
- Crown roads $\frac{1}{2}$ to $\frac{3}{4}$ inch per linear foot after project installation and maintain there after (p. 5)
- Stabilize all disturbed soils with seed and mulch (p.33)

Poor and Critical Highway Structures Listing for Braintree 2014 Culvert Inventory

	Road Name	Culvert Number	Latitude	Longitude	Height	Width	Length	Material	Type	Condition	Priority
1	BATTLES BROOK RD	8	43.97256	-72.73204	36	36	25	Steel Corrugated	Round	Poor	High
2	BATTLES BROOK RD	9	43.97394	-72.73223	48	36	30	Mixed	Round	Poor	High
3	BENT HILL RD	33	43.98664	-72.72048	24	24	30	Steel Corrugated	Round	Poor	High
4	BENT HILL RD	37	43.98973	-72.71848	36	36	30	Steel Corrugated	Round	Poor	High
5	DUCLOS RD	1	43.95200	-72.70700	72	72	30	Steel Corrugated	Round	Poor	High
6	FARNSWORTH BROOK RD	10	43.99978	-72.66386	72	96	50	Steel Corrugated	Ellipse	Fair	High
7	RIFORD BROOK RD	12	43.94805	-72.74344	84	144	48	Steel Corrugated	Ellipse	Fair	High
8	RIFORD BROOK RD	13	43.94789	-72.74416	84	105	45	Steel Corrugated	Ellipse	Fair	High
9	RIFORD BROOK RD	16	43.94526	-72.74849	80	105	40	Steel Corrugated	Ellipse	Fair	High
10	RIFORD BROOK RD	18	43.94441	-72.74981	72	72	35	Steel Corrugated	Round	Fair	High
11	THAYER BROOK RD	1	43.92809	-72.74408	30	30	30	Steel Corrugated	Round	Poor	High
12	THAYER BROOK RD	4	43.92841	-72.73976	15	15	25	Steel Corrugated	Round	Poor	High
13	THAYER BROOK RD	5	43.92843	-72.73837	15	15	25	Steel Corrugated	Round	Poor	High
14	THAYER BROOK RD	6	43.92829	-72.73769	24	24	25	Plastic Smooth	Round	Poor	High
15	THAYER BROOK RD	7	43.92790	-72.73666	15	15	30	Steel Corrugated	Round	Poor	High
16	THAYER BROOK RD	11	43.92590	-72.73261	15	15	25	Steel Corrugated	Round	Poor	High
17	THAYER BROOK RD	12	43.92543	-72.73189	15	15	25	Steel Corrugated	Round	Poor	High
18	THAYER BROOK RD	17	43.92409	72.71924	108	144	40	Steel Corrugated	Ellipse	Poor	High
19	THAYER BROOK RD	21	43.92101	-72.70974	108	144	?	Steel Corrugated	Ellipse	Fair	High
20	ALLEN BENT RD	9	44.00768	-72.72935	15	15	30	Steel Corrugated	Round	Poor	Medium
21	BATTLES BROOK RD	1	43.96744	-72.72721	18	18	25	Plastic Smooth	Round	Poor	Medium
22	BENT HILL RD	8	43.96196	-72.72424	15	15	30	Steel Corrugated	Round	Poor	Medium
23	BENT HILL RD	10	43.96367	-72.72561	15	15	35	Steel Corrugated	Round	Poor	Medium
24	BOWEN HILL RD	2	43.94217	-72.68854	15	15	30	Steel Corrugated	Round	Poor	Medium
25	BOWEN HILL RD	4	43.94340	-72.69235	15	15	18	Steel Corrugated	Round	Poor	Medium
26	BRAINTREE HILL RD	7	43.98784	-72.71145	15	15	30	Steel Corrugated	Round	Poor	Medium
27	BRAINTREE HILL RD	8	43.98677	-72.71063	15	15	30	Steel Corrugated	Round	Poor	Medium

28	BRAINTREE HILL RD	26	43.95269	-72.68866	15	15	50	Steel Corrugated	Round	Poor	Medium
29	BRUORTON HILL RD	9	43.94433	-72.70048	0	0	0	Unknown	Round	Unknown	Medium
30	DUCLOS RD	5	43.95589	-72.70509	15	15	30	Steel Corrugated	Round	Poor	Medium
31	FARNSWORTH BROOK RD	7	43.99836	-72.65875	15	15	35	Steel Corrugated	Round	Poor	Medium
32	FARNSWORTH BROOK RD	8	43.99871	-72.65935	15	15	35	Steel Corrugated	Round	Poor	Medium
33	FARNSWORTH BROOK RD	9	43.99908	-72.66226	24	24	40	Steel Corrugated	Round	Poor	Medium
34	FARNSWORTH BROOK RD	12	44.00003	-72.66584	15	15	40	Steel Corrugated	Round	Poor	Medium
35	THAYER BROOK RD	19	43.92216	-72.71215	15	15	30	Steel Corrugated	Round	Poor	Medium
36	BENT HILL RD	22	43.97629	-72.72226	15	15	35	Steel Corrugated	Round	Poor	Low
37	BRUORTON HILL RD	10	43.94410	-72.70044	15	15	26	Steel Corrugated	Round	Poor	Low
38	CONNECTICUT CORNERS RD	1	44.00692	-72.73352	0	0	0	Unknown	Unknown	Unknown	Low
39	DAVIS ACRES RD	1	44.00330	-72.67317	0	0	25	Unknown	Round	Critical	Low
40	HOCKMAN HILL RD	5	43.97614	-72.68500	15	15	40	Steel Corrugated	Round	Poor	Low
41	KENDALL RD	2	43.94683	-72.74901	18	18	40	Steel Corrugated	Round	Poor	Low
42	LABOUNTY RD	3	43.96634	-72.66778	15	15	30	Steel Corrugated	Round	Poor	Low
43	LABOUNTY RD	5	43.96472	-72.66775	15	15	30	Steel Corrugated	Round	Poor	Low
44	LABOUNTY RD	6	43.96354	-72.66773	15	15	35	Steel Corrugated	Round	Poor	Low
45	PETH RD	18	43.97660	-72.67805	15	15	30	Steel Corrugated	Round	Poor	Low
46	PETH RD	19	43.97598	-72.67643	15	15	40	Steel Corrugated	Round	Poor	Low
47	PETH RD	22	43.97433	-72.67259	15	15	?	Steel Corrugated	Round	Unknown	Low
48	PETH RD	30	43.96938	-72.66755	15	15	30	Steel Corrugated	Round	Unknown	Low
49	RIFORD BROOK RD	11	43.94835	-72.74137	15	15	24	Steel Corrugated	Round	Poor	Low
50	THRESHER RD	16	43.99873	-72.73781	15	15	60	Steel Corrugated	Round	Poor	Low
51	THRESHER RD	23	44.00717	-72.73095	15	15	30	Steel Corrugated	Round	Poor	Low
52	THRESHER RD	31	44.00480	-72.72423	15	15	30	Steel Corrugated	Round	Poor	Low
53	THRESHER RD	34	43.99972	-72.71817	24	24	26	Steel Corrugated	Round	Poor	Low
54	THRESHER RD	35	43.99929	-72.71774	15	15	32	Steel Corrugated	Round	Poor	Low
55	THRESHER RD	36	43.99867	-72.71736	15	15	26	Steel Corrugated	Round	Poor	Low
56	WILSON RD	1	43.99885	-72.73798	48	48	25	Steel Corrugated	Round	Poor	Low
57	WOODCHUCK HOLLOW RD	3	43.99286	-72.73688	15	15	30	Steel Corrugated	Round	Poor	Low

From: Borg, Jaron [mailto:Jaron.Borg@vermont.gov]
Sent: Friday, March 25, 2016 1:18 PM
To: Rita Seto; Jeff Masterson
Subject: RE: Braintree Thayer Brook culverts project summary

Rita,

Thank you for checking in. I agree with the outline you have provided.

Sincerely,

Jaron Borg, River Management Engineer
Watershed Management Division, Rivers Program
Vermont Department of Environmental Conservation
1 National Life Drive, Main 2
Montpelier, VT 05620-3522
802-371-8342 / Jaron.Borg@vermont.gov
On the Web @ <http://www.anr.state.vt.us/dec/waterq/rivers.htm>

From: Rita Seto [mailto:rseto@trorc.org]
Sent: Friday, March 25, 2016 8:56 AM
To: Borg, Jaron <Jaron.Borg@vermont.gov>; Jeff Masterson <braintreehighway@gmail.com>
Subject: Braintree Thayer Brook culverts project summary

Good morning Jaron,

it was great to meet you and chat while we toured Thayer Brook Rd. Here is the summary of the field visit we took Wed. March 23, 2016 from 1pm to 3pm.

Culvert #1 - existing 30" x 30' steel - poor condition, too short. Recommend upgrade to 10'.3" x 6'9" x 50' steel pipe.

Improve ditching between culvert #4-#7.

Culvert #4 - existing 15" x 25' steel - poor condition, too short. Recommend upgrade to 18" x 40' and improve ditching for drainage flow.

Culvert #5 - existing 15" x 25' steel - poor condition, too short. Recommend upgrade to 18" x 40' and improve ditching for drainage flow.

Ditching along ledge about 200ft from culvert #5 - #6

Culvert #6 - existing 24" x 25' plastic - poor condition, too short. Recommend upgrade to either 36" or 48" x 40' steel. Add more rip rap above culvert where there is a intermittent stream to prevent cutting of bank. For the outlet, add stone apron near perched outlet.

Culvert #7 - existing 15" x 30' steel - poor condition, too short. Recommend upgrade to 18" x 40' steel. Add 12" stone above culvert inlet to reduce erosion from drainage of bank above.

Culvert #10 - existing 48" x 40' plastic - good condition but can be replaced with 48" x 40' and reset lower in ground for improved drainage as there is an intermittent stream. Add riprap below outlet to reduce perched erosion impacts.

Culvert #11 - existing 15" x 25' steel - poor condition, too short. Recommend upgrade to 18" x 40' steel and reset lower in road (it was very shallow as evident of recent grading efforts).

Culvert #12 - existing 15" x 25' steel - poor condition, too short. Recommend upgrade to 18" x 40' steel and improve ditching to inlet. The outlet has existing gully erosion, recommend around 15yds of riprap from outlet to reduce erosion.

Please confirm your concurrence on the project scope.

Thank you! Have a great weekend.
Rita

Rita Seto, AICP | Senior Planner



Two Rivers-Ottawaquechee Regional Commission
128 King Farm Rd, Woodstock, VT 05091

Tel: 802.457.3188 | Cell: 802.281.2927 | Fax: 802.457.4728

rseto@trorc.org | www.trorc.org | [TRORC Facebook](#)

April 6, 2016

Mr. Jeff Masterson
Town of Braintree
932 VT Route 12A
Braintree, VT 05060

Dear Jeff,

I am pleased to provide a letter of support for the Town of Braintree's application submission for a Category D Better Back Roads grant for the improved ditching upgrades and multiple culvert replacements along Thayer Brook Road. I understand that the limitations of ledge in that area prevent proper drainage and this continues to be a problem for the road crew to fix. During the 2014 culvert inventory, we identified many culverts along Thayer Brook Road that are in need of upsizing to reduce erosion on the roadway and into the nearby stream.

Please contact me if you have any questions.

Sincerely,



Rita Seto, AICP
Senior Planner

128 King Farm Rd.
Woodstock, VT 05091
802-457-3188
trorc.org

William B. Emmons, III, Chair
Peter G. Gregory, AICP, Executive Director